

(Partial Translation)

Japanese Laid-Open Utility Model Publication No. 5-69733

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Filing Date: March 15, 1991

Inventors: S. FUJISAWA et al.

Applicant: Stanley Electric Co., Ltd.

(page 4, lines 6-10)

The above-described objective is achieved by a planar light source device for a cathode ray tube according to the present invention, in which a lighting curtain for directly reducing light and a diffusing plate for diffusing light are sequentially placed on the cathode ray tube accommodated in a lamp house, wherein a transparent conductive layer formed of a metal oxide is provided between the lighting curtain and the diffusing plate and a conductive surface of the transparent conductive layer is grounded.

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CLAIMS

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[Utility model registration claim]

[Claim 1] Surface light source equipment of a cold cathode tube which interposes the transparent electric conduction film which consists of a metallic oxide between the above-mentioned lighting curtain and a diffusion board, and is characterized by grounding the electric conduction side of this transparent electric conduction film in the surface light source equipment of the cold cathode tube which lays the lighting curtain which dims direct light, and the diffusion board which diffuses light one by one, and forms it on the cold cathode tube contained in a lamp house.

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DETAILED DESCRIPTION

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[Detailed explanation of a design]

[0001]

[Industrial Application]

This design is related with the surface light source equipment of the cold cathode tube which used the transparent electric conduction film which is applied to the surface light source equipment of the cold cathode tube used as back lighting of a liquid crystal display, especially consists of a metallic oxide.

[0002]

[Description of the Prior Art]

Conventionally, as surface light source equipment of such a cold cathode tube, the thing of structure as shown in drawing 2 is known.

As illustrated the surface light source equipment 1 of a cold cathode tube They are two or more cold cathode tubes (CFL is called hereafter.) in the lamp house 2 of the shape of a rectangle box to which opening of the upper part was carried out. 3 is contained, opening 2a of this lamp house 2 is covered with the lighting curtain 4 for dimming the direct light of the above CFL3, the diffusion board 5 for diffusing light is further formed on this lighting curtain 4, and these are fixed in one.

The above-mentioned lighting curtain 4 is formed with the polyester film which deposited aluminum etc. into the right above portion of the above CFL3. And the above-mentioned diffusion board 5 is formed with the synthetic-resin board of opalescence etc.

Since the surface light source equipment 1 of this cold cathode tube was used as back lighting of a liquid crystal display, liquid crystal (not shown) was prepared on the above-mentioned diffusion board 5.

[0003]

[Problem(s) to be Solved by the Device]

By the way, if it was in the surface light source equipment 1 of such a conventional cold cathode tube, since the local heat generated from CFL3 got across to liquid crystal through the above-mentioned diffusion board 5, temperature became uneven in respect of this liquid crystal, and there was a problem that nonuniformity arose in the display.

Moreover, since it was not formed in the structure where the radiated noise generated from CFL3 is removable, there was a problem that this radiated noise had a bad influence on other electronic equipment.

[0004]

The purpose of this design is to offer the surface light source equipment of a cold cathode tube which can prevent the bad influence to other electronic equipment of the radiated noise generated from CFL while being able to prevent that the local heat generated from CFL does a bad influence to a liquid crystal display in view of the above-mentioned technical problem.

[0005]

[Means for Solving the Problem]

The above-mentioned purpose is attained by according to the surface light source equipment of the cold cathode tube of this design, interposing the transparent electric-conduction film which consists of a metallic oxide between the above-mentioned lighting curtain and a diffusion board, and grounding the electric-conduction side of this transparent electric-conduction film to it in the surface light source equipment of the cold cathode tube which lays the lighting curtain which dims direct light, and the diffusion board which diffuses light one by one, and forms it on the cold cathode tube contained in a lamp house.

[0006]

[Function]

Since the transparent electric conduction film interposed between the lighting curtain and the diffusion board is formed of the metallic oxide according to the above-mentioned composition, the local heat generated from CFL is transmitted to the electric conduction side of this transparent electric conduction film and temperature is equalized in this electric conduction side, the display nonuniformity of liquid

crystal is lost.

[0007]

Moreover, since the above-mentioned transparent electric conduction film is interposed between a lighting curtain and a diffusion board and the electric conduction side of this transparent electric conduction film is grounded, since the radiated noise generated from CFL is dropped and cut into a ground from this electric conduction side, it decreases a radiated noise and does not have a bad influence on other electronic equipment.

[0008]

[Example]

Hereafter, one example of the surface light source equipment of the cold cathode tube concerning this design is explained in detail based on an accompanying drawing.

The lamp house 12 of the surface light source equipment 11 of the cold cathode tube of this example is presenting the shape of a rectangle box to which opening of the upper part was carried out, and two or more CFL(s)13 are contained in this lamp house 12 as shown in drawing 1.

[0009]

Opening 12a of the lamp house 12 which contains the above CFL13 is covered with the rectangle plate-like lighting curtain 14 which dims this direct light of CFL13. This lighting curtain 14 consists of polyester film which carried out the vacuum plating of aluminium to the portion equivalent to which the direct light of the above CFL13 is.

[0010]

Moreover, on this lighting curtain 14, the transparent electric conduction film 16 which consists of a metallic oxide is laid. the ITO (Indium Tin Oxide) film, In<sub>2</sub>O<sub>3</sub>, and SnO<sub>2</sub> which are transparent to a visible ray as for this transparent electric conduction film 16, and have electrical conductivity etc. -- it is constituted That is, this transparent electric conduction film 16 forms the conductive layer of a metallic oxide on the transparent film made of synthetic resin. It connects with the ground pattern of the printed circuit board (not shown) with which this surface light source equipment 11 was equipped, and electric conduction side 16a of this transparent electric conduction film 16 is carried out ground 17.

[0011]

Furthermore, the diffusion board 15 which diffuses light is laid on the above-mentioned transparent electric conduction film 16. This diffusion board 15 is formed with the synthetic-resin board of opalescence etc.

[0012]

The lighting curtain 14, the transparent electric conduction film 16 which consists of a metallic oxide, and the diffusion board 15 are laid one by one in this way on the lamp house 12 which holds the above CFL13, these are unified, and surface light source equipment 11 is constituted. And on this surface light source equipment 11, liquid crystal (not shown) is laid that the surface light source equipment 11 of this example should be used as back lighting of a liquid crystal display.

[0013]

Next, the operation in the above-mentioned example is described.

As mentioned above, the transparent electric conduction film 16 which consists of metallic oxides, such as an ITO film, is interposed between the lighting curtains 14 and the diffusion boards 15 which were laid on the lamp house 12 which contains the above CFL13. The local heat which this generates from the above CFL13 will be transmitted to electric conduction side 16a of this transparent electric conduction film 16. Since this electric conduction side 16a consists of a metallic oxide, temperature will be equalized in this electric conduction side 16a. Therefore, uniform temperature gets across to a liquid crystal side, the display nonuniformity is lost, and the bad influence to the liquid crystal display of the local heat generated from the above CFL13 can be prevented.

[0014]

Moreover, the transparent electric conduction film 16 is interposed between the lighting curtain 14 and the diffusion board 15 in this way, and electric conduction side 16a of this transparent electric conduction film 16 is connected to the ground pattern of a printed circuit board. Therefore, it can prevent effectively that it decreases this radiated noise and has a bad influence on other electronic equipment since the radiated noise generated from the above CFL13 is dropped and cut into a ground 17 from electric conduction side 16a of the above-mentioned transparent electric conduction film 16.

Furthermore, to a visible ray, since the above-mentioned transparent electric conduction film 16 is transparent, it does not check a liquid crystal display substantially.

[0015]

[Effect of the Device]

The outstanding effect [ say / that the bad influence to other electronic equipment attached to the liquid crystal display of a radiated noise generated from CFL while being able to prevent the bad influence to the liquid crystal display of the local heat which is generated from CFL according to / like / the surface light source equipment of the cold cathode tube of this design described above can be prevented ] is

demonstrated.

[Filing Date] February 5, Heisei 4 [the procedure amendment 1]

[Document to be Amended] Specification [the subject name for amendment] 0014 -- [Method of Amendment] Change [the content of amendment]

[0014]

Moreover, the transparent electric conduction film 16 is interposed between the lighting curtain 14 and the diffusion board 15 in this way, and electric conduction side 16a of this transparent electric conduction film 16 is connected to the ground pattern of a printed circuit board. Therefore, it can prevent effectively that it decreases this radiated noise and has a bad influence on other electronic equipment since the radiated noise generated from the above CFL13 is dropped and cut into a ground 17 from electric conduction side 16a of the above-mentioned transparent electric conduction film 16.

Furthermore, to a visible ray, since the above-mentioned transparent electric conduction film 16 is transparent, it does not check a liquid crystal display substantially.

In addition, the above-mentioned transparent electric conduction film 16 may be interposed between CFL13 and the lighting curtain 14, or may be prepared in the front face of surface light source equipment 11.

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TECHNICAL FIELD

---

[Industrial Application]

This design is related with the surface light source equipment of the cold cathode tube which used the transparent electric conduction film which is applied to the surface light source equipment of the cold cathode tube used as back lighting of a liquid crystal display, especially consists of a metallic oxide.  
[0002]

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---

PRIOR ART

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[Description of the Prior Art]

Conventionally, as surface light source equipment of such a cold cathode tube, the thing of structure as shown in drawing 2 is known.

As illustrated the surface light source equipment 1 of a cold cathode tube the inside of the lamp house 2 of the shape of a rectangle box to which opening of the upper part was carried out -- two or more cold cathode tubes (CFL is called hereafter --) 3 is contained, opening 2a of this lamp house 2 is covered with the lighting curtain 4 for dimming the direct light of the above CFL3, the diffusion board 5 for diffusing light is further formed on this lighting curtain 4, and these are fixed in one.

The above-mentioned lighting curtain 4 is formed with the polyester film which deposited aluminum etc. into the right above portion of the above CFL3. And the above-mentioned diffusion board 5 is formed with the synthetic-resin board of opalescence etc.

Since the surface light source equipment 1 of this cold cathode tube was used as back lighting of a liquid crystal display, liquid crystal (not shown) was prepared on the above-mentioned diffusion board 5.

[0003]

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EFFECT OF THE INVENTION

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[Effect of the Device]

The outstanding effect [ say / that the bad influence to other electronic equipment attached to the liquid crystal display of a radiated noise generated from CFL while being able to prevent the bad influence to the liquid crystal display of the local heat which is generated from CFL according to / like / the surface light source equipment of the cold cathode tube of this design described above can be prevented ] is demonstrated.

[Filing Date] February 5, Heisei 4. [Procedure amendment 1]

[Document to be Amended] Specification. [Item(s) to be Amended] 0014. [Method of Amendment] Change. [Proposed Amendment] [0014]

Moreover, the transparent electric conduction film 16 is interposed between the lighting curtain 14 and the diffusion board 15 in this way, and electric conduction side 16a of this transparent electric conduction film 16 is connected to the ground pattern of a printed circuit board. Therefore, it can prevent effectively that it decreases this radiated noise and has a bad influence on other electronic equipment since the radiated noise generated from the above CFL13 is dropped and cut into a ground 17 from electric conduction side 16a of the above-mentioned transparent electric conduction film 16.

Furthermore, to a visible ray, since the above-mentioned transparent electric conduction film 16 is transparent, it does not check a liquid crystal display substantially.

In addition, the above-mentioned transparent electric conduction film 16 may be interposed between CFL13 and the lighting curtain 14, or may be prepared in the front face of surface light source equipment 11.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Device]

By the way, if it was in the surface light source equipment 1 of such a conventional cold cathode tube, since the local heat generated from CFL3 got across to liquid crystal through the above-mentioned diffusion board 5, temperature became uneven in respect of this liquid crystal, and there was a problem that nonuniformity arose in the display.

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MEANS

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[Means for Solving the Problem]

The above-mentioned purpose is attained by according to the surface light source equipment of the cold cathode tube of this design, interposing the transparent electric-conduction film which consists of a metallic oxide between the above-mentioned lighting curtain and a diffusion board, and grounding the electric-conduction side of this transparent electric-conduction film to it in the surface light source equipment of the cold cathode tube which lays the lighting curtain which dims direct light, and the diffusion board which diffuses light one by one, and forms it on the cold cathode tube contained in a lamp house.

[0006]

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OPERATION

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[Function]

Since the transparent electric conduction film interposed between the lighting curtain and the diffusion board is formed of the metallic oxide according to the above-mentioned composition, the local heat generated from CFL is transmitted to the electric conduction side of this transparent electric conduction film and temperature is equalized in this electric conduction side, the display nonuniformity of liquid crystal is lost.

[0007]

Moreover, since the above-mentioned transparent electric conduction film is interposed between a lighting curtain and a diffusion board and the electric conduction side of this transparent electric conduction film is grounded, since the radiated noise generated from CFL is dropped and cut into a ground from this electric conduction side, it decreases a radiated noise and does not have a bad influence on other electronic equipment.

[0008]

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EXAMPLE

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[Example]

Hereafter, one example of the surface light source equipment of the cold cathode tube concerning this design is explained in detail based on an accompanying drawing.

The lamp house 12 of the surface light source equipment 11 of the cold cathode tube of this example is presenting the shape of a rectangle box to which opening of the upper part was carried out, and two or more CFL(s)13 are contained in this lamp house 12 as shown in drawing 1.

[0009]

Opening 12a of the lamp house 12 which contains the above CFL13 is covered with the rectangle plate-like lighting curtain 14 which dims this direct light of CFL13. This lighting curtain 14 consists of polyester film which carried out the vacuum plating of aluminium to the portion equivalent to which the direct light of the above CFL13 is.

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Moreover, on this lighting curtain 14, the transparent electric conduction film 16 which consists of a metallic oxide is laid. the ITO (Indium Tin Oxide) film, In<sub>2</sub>O<sub>3</sub>, and SnO<sub>2</sub> which are transparent to a visible ray as for this transparent electric conduction film 16, and have electrical conductivity etc. -- it is constituted That is, this transparent electric conduction film 16 forms the conductive layer of a metallic oxide on the transparent film made of synthetic resin. It connects with the ground pattern of the printed circuit board (not shown) with which this surface light source equipment 11 was equipped, and electric conduction side 16a of this transparent electric conduction film 16 is carried out ground 17.

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Furthermore, the diffusion board 15 which diffuses light is laid on the above-mentioned transparent electric conduction film 16. This diffusion board 15 is formed with the synthetic-resin board of opalescence etc.

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The lighting curtain 14, the transparent electric conduction film 16 which consists of a metallic oxide, and the diffusion board 15 are laid one by one in this way on the lamp house 12 which holds the above CFL13, these are unified, and surface light source equipment 11 is constituted. And on this surface light source equipment 11, liquid crystal (not shown) is laid that the surface light source equipment 11 of this example should be used as back lighting of a liquid crystal display.

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Next, the operation in the above-mentioned example is described.

As mentioned above, the transparent electric conduction film 16 which consists of metallic oxides, such as an ITO film, is interposed between the lighting curtains 14 and the diffusion boards 15 which were laid on the lamp house 12 which contains the above CFL13. The local heat which this generates from the above CFL13 will be transmitted to electric conduction side 16a of this transparent electric conduction film 16. Since this electric conduction side 16a consists of a metallic oxide, temperature will be equalized in this electric conduction side 16a. Therefore, uniform temperature gets across to a liquid crystal side, the display nonuniformity is lost, and the bad influence to the liquid crystal display of the local heat generated from the above CFL13 can be prevented.

[0014]

Moreover, the transparent electric conduction film 16 is interposed between the lighting curtain 14 and the diffusion board 15 in this way, and electric conduction side 16a of this transparent electric conduction film 16 is connected to the ground pattern of a printed circuit board. Therefore, it can prevent effectively that it decreases this radiated noise and has a bad influence on other electronic equipment since the radiated noise generated from the above CFL13 is dropped and cut into a ground 17 from electric conduction side 16a of the above-mentioned transparent electric conduction film 16.

Furthermore, to a visible ray, since the above-mentioned transparent electric conduction film 16 is transparent, it does not check a liquid crystal display substantially.

[0015]

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] It is the outline decomposition perspective diagram showing the example of the surface light source equipment of the cold cathode tube concerning this design.

[Drawing 2] It is the outline decomposition perspective diagram showing the surface light source equipment of the conventional cold cathode tube.

[Description of Notations]

11 Surface Light Source Equipment

12 Lamp House

12a Opening of a lamp house

13 Cold Cathode Tube (CFL)

14 Lighting Curtain

15 Diffusion Board

16 Transparent Electric Conduction Film

16a Electric conduction side

17 Ground

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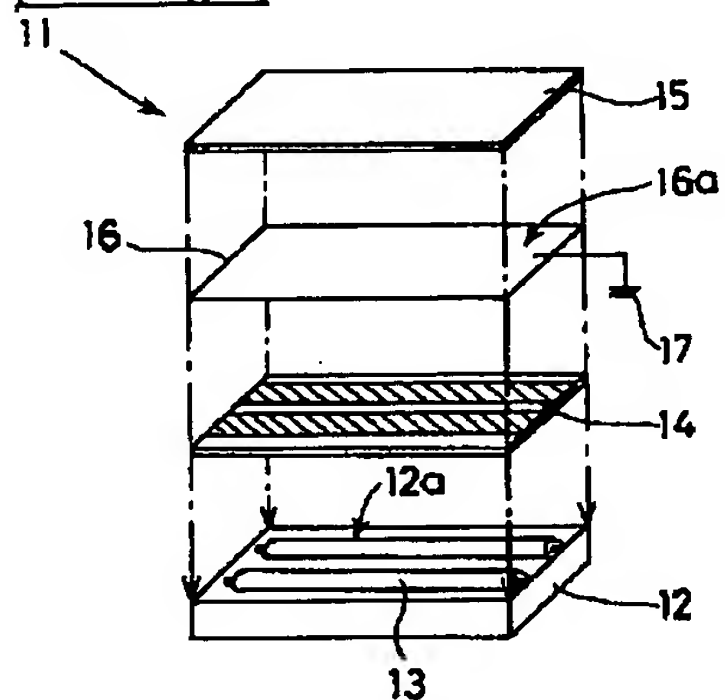
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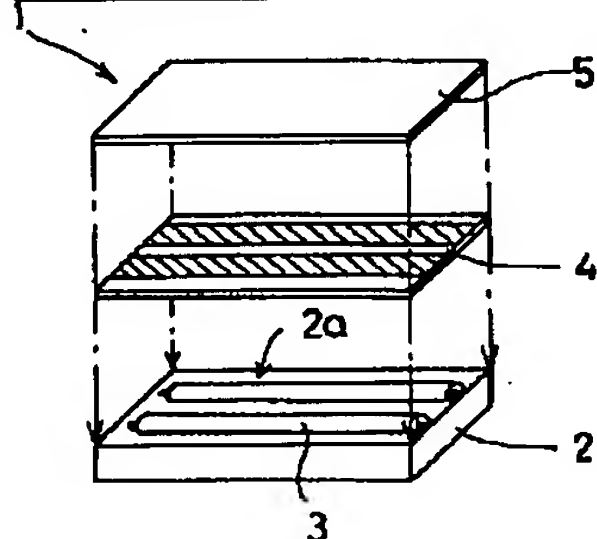
DRAWINGS

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[Drawing 1]



[Drawing 2]



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[Translation done.]



(19)日本国特許庁 (J P)

(12) 公開実用新案公報 (U)

(11)実用新案出願公開番号

実開平5-69733

(43)公開日 平成5年(1993)9月21日

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G 0 2 F	1/1335	5 3 0	7811-2K	
	1/133	5 8 0	7820-2K	
G 1 2 B	17/02		6843-2F	
// F 2 1 V	3/04	E	2113-3K	

審査請求 有 請求項の数1(全 2 頁)

(21)出願番号 実願平3-22425

(22)出願日 平成3年(1991)3月15日

(71)出願人 000002303

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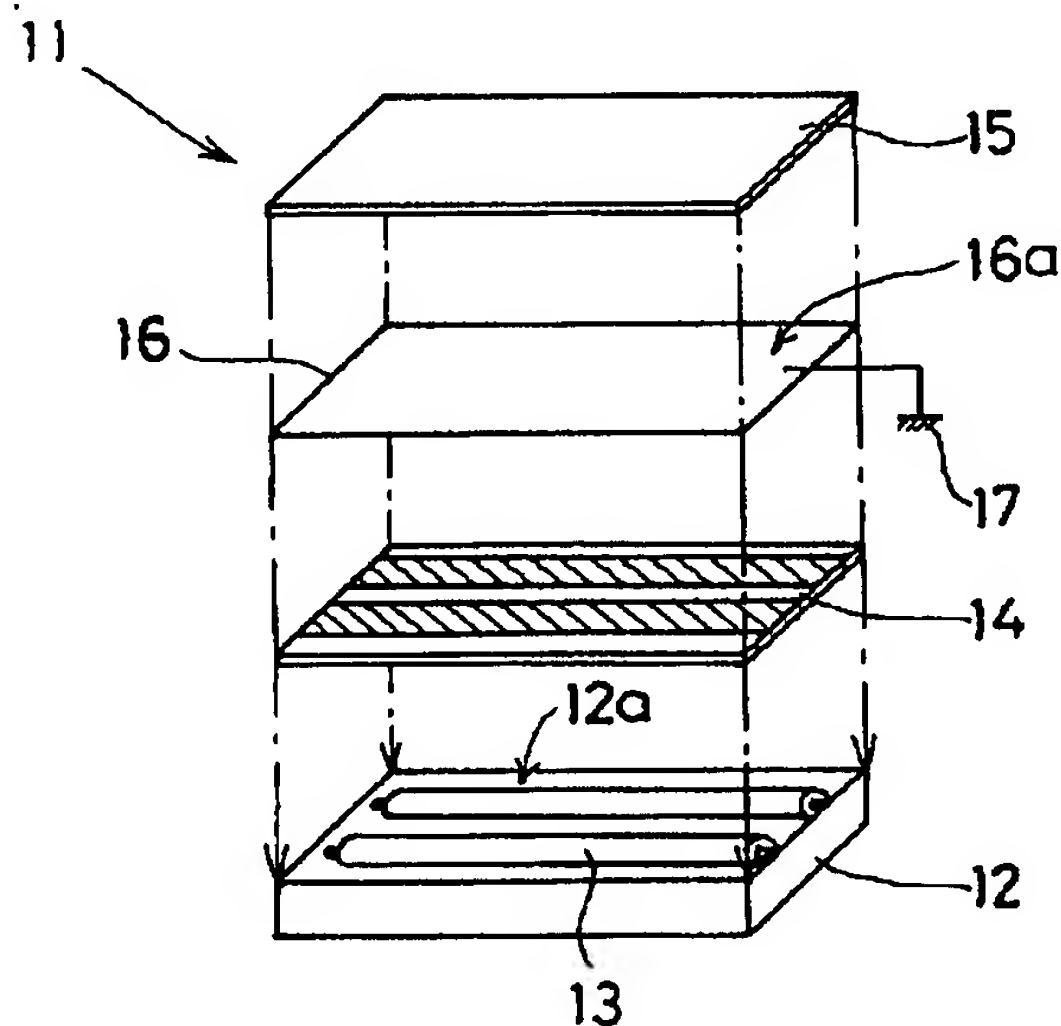
(74)代理人 弁理士 平山 一幸 (外2名)

(54)【考案の名称】 冷陰極管の面光源装置

(57)【要約】

【目的】 冷陰極管から発生する局所的な熱による液晶表示装置への悪影響を防止し得ると共に、冷陰極管から発生する放射ノイズの他の電子機器への悪影響を防止し得る冷陰極管の面光源装置を提供する。

【構成】 ランプハウス12内に収納する冷陰極管13上に、直接光を減光するライティングカーテン14と、光を拡散する拡散板15とを順次載置して形成する冷陰極管の面光源装置11において、上記ライティングカーテン14と拡散板15との間に金属酸化物からなる透明導電膜16を介設し、該透明導電膜16の導電面16aをアース17することにより構成する。



(19)日本国特許庁 (J P)

(12) 公開実用新案公報 (U)

(11)実用新案出願公開番号

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(21)出願番号 実願平3-22425

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(71)出願人 000002303

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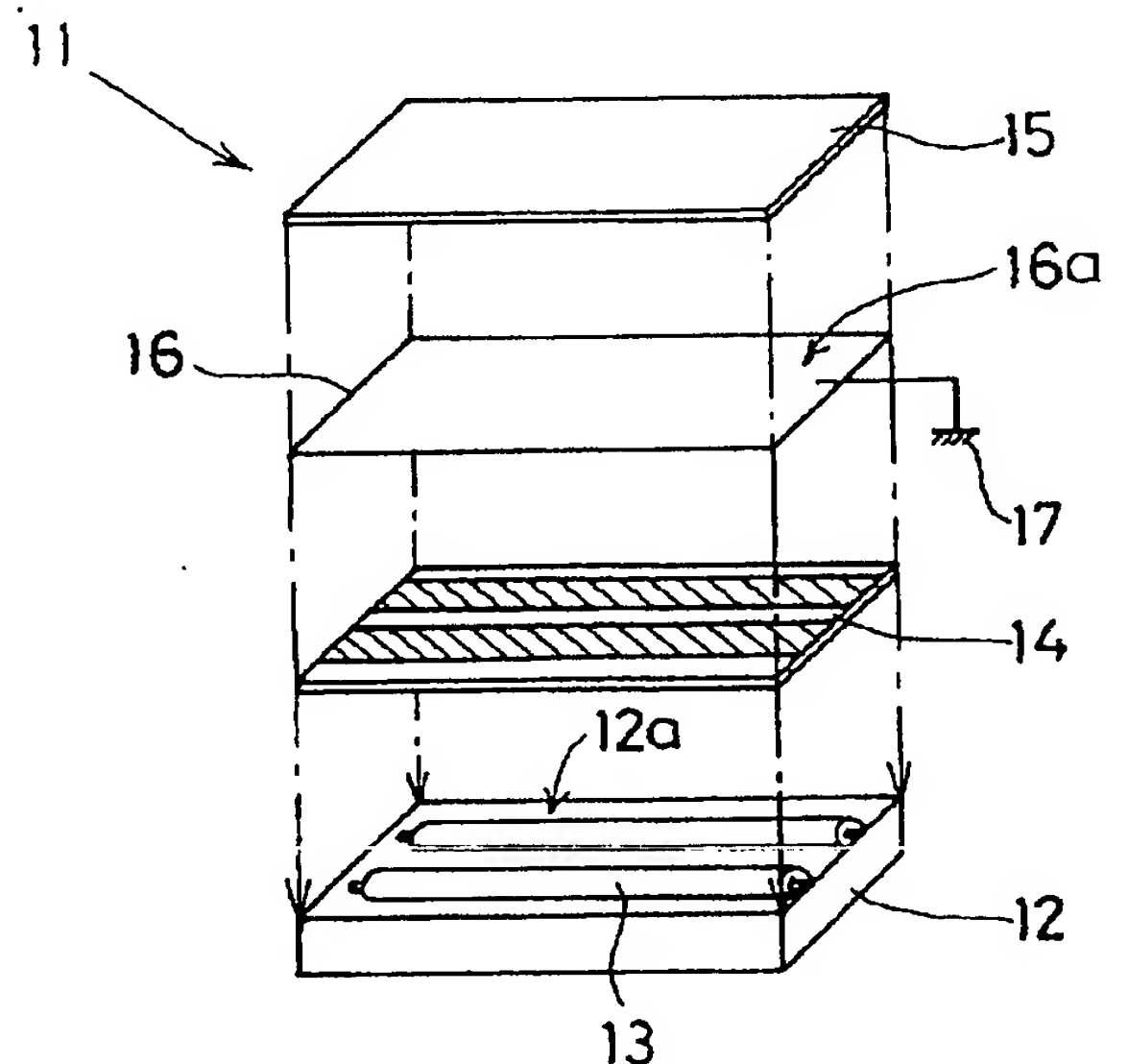
(74)代理人 弁理士 平山 一幸 (外2名)

(54)【考案の名称】 冷陰極管の面光源装置

(57)【要約】

【目的】 冷陰極管から発生する局所的な熱による液晶表示装置への悪影響を防止し得ると共に、冷陰極管から発生する放射ノイズの他の電子機器への悪影響を防止し得る冷陰極管の面光源装置を提供する。

【構成】 ランプハウス12内に収納する冷陰極管13上に、直接光を減光するライティングカーテン14と、光を拡散する拡散板15とを順次載置して形成する冷陰極管の面光源装置11において、上記ライティングカーテン14と拡散板15との間に金属酸化物からなる透明導電膜16を介設し、該透明導電膜16の導電面16aをアース17することにより構成する。



(2)

1

【実用新案登録請求の範囲】

【請求項1】 ランプハウス内に収納する冷陰極管上に直接光を減光するライティングカーテンと、光を拡散する拡散板とを順次載置して形成する冷陰極管の面光源装置において、上記ライティングカーテンと拡散板との間に金属酸化物からなる透明導電膜を介設し、該透明導電膜の導電面をアースすることを特徴とする、冷陰極管の面光源装置。

【図面の簡単な説明】

【図1】 本考案に係る冷陰極管の面光源装置の実施例を示す概略分解斜視図である。

【図2】 従来の冷陰極管の面光源装置を示す概略分解斜

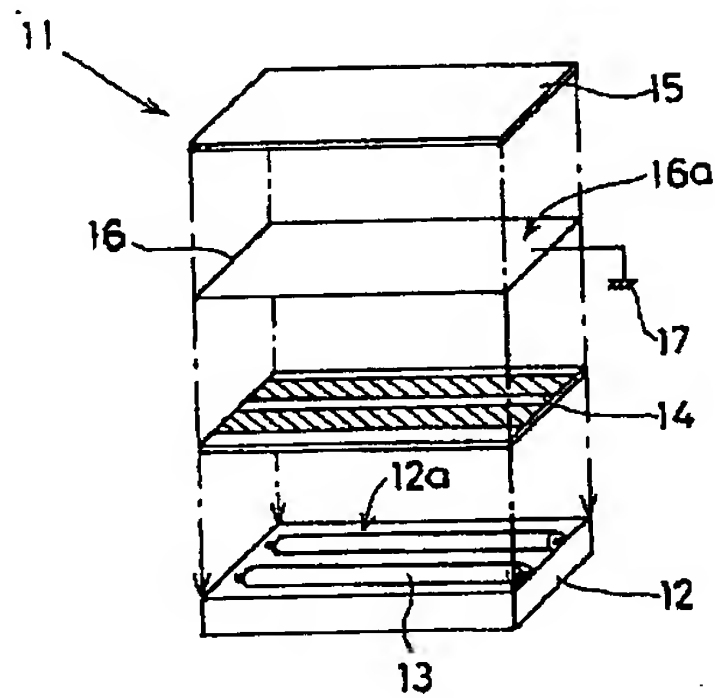
2

視図である。

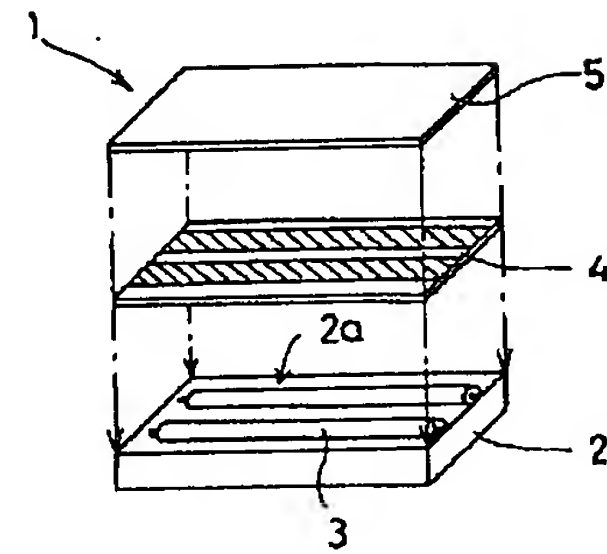
【符号の説明】

- |       |            |
|-------|------------|
| 1 1   | 面光源装置      |
| 1 2   | ランプハウス     |
| 1 2 a | ランプハウスの開口部 |
| 1 3   | 冷陰極管 (CFL) |
| 1 4   | ライティングカーテン |
| 1 5   | 拡散板        |
| 1 6   | 透明導電膜      |
| 1 6 a | 導電面        |
| 1 7   | アース        |

【図1】



【図2】



(3)

**【考案の詳細な説明】****【0001】****【産業上の利用分野】**

本考案は、液晶表示装置のバック照明として使用される冷陰極管の面光源装置に係り、特に金属酸化物からなる透明導電膜を使用した冷陰極管の面光源装置に関するものである。

**【0002】****【従来の技術】**

従来、このような冷陰極管の面光源装置としては、図2に示されているような構造のものが知られている。

図示されているように、冷陰極管の面光源装置1は、上部が開口された矩形箱体状のランプハウス2内に複数本の冷陰極管（以下、CFLと称する。）3を収納し、このランプハウス2の開口部2aを上記CFL3の直接光を減光するためのライティングカーテン4にて覆い、さらに、該ライティングカーテン4上に光を拡散するための拡散板5を設けて、これらを一体的に固定したものである。

上記ライティングカーテン4は、例えば上記CFL3の直上部分にアルミニウム等を蒸着したポリエステルフィルムにて形成されている。そして、上記拡散板5は、例えば乳白色の合成樹脂板等によって形成されている。

この冷陰極管の面光源装置1は、液晶表示装置のバック照明として使用されるため、上記拡散板5上には液晶（図示せず）が設けられていた。

**【0003】****【考案が解決しようとする課題】**

ところで、このような従来の冷陰極管の面光源装置1にあつては、CFL3から発生する局所的な熱が上記拡散板5を介して液晶に伝わるので、該液晶面で温度が不均一になり、その表示にムラが生じるという問題があつた。

また、CFL3から発生する放射ノイズを除去できる構造に形成されていないので、該放射ノイズが他の電子機器に悪影響を与えるという問題があつた。

**【0004】**

本考案の目的は、上記課題に鑑み、CFLから発生する局所的な熱が液晶表示

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装置へ悪影響を及ぼすのを防止し得ると共に、CFLから発生する放射ノイズの他の電子機器への悪影響を防止することができる、冷陰極管の面光源装置を提供することにある。

【0005】

【課題を解決するための手段】

上記目的は、本考案の冷陰極管の面光源装置によれば、ランプハウス内に収納する冷陰極管上に、直接光を減光するライティングカーテンと、光を拡散する拡散板とを順次載置して形成する冷陰極管の面光源装置において、上記ライティングカーテンと拡散板との間に金属酸化物からなる透明導電膜を介設し、該透明導電膜の導電面をアースすることにより、達成される。

【0006】

【作用】

上記構成によれば、ライティングカーテンと拡散板との間に介設された透明導電膜が金属酸化物によって形成されているので、CFLから発生する局所的な熱がこの透明導電膜の導電面に伝達され、該導電面において温度が均一化されるため、液晶の表示ムラが無くなる。

【0007】

また、上記透明導電膜がライティングカーテンと拡散板との間に介設され、該透明導電膜の導電面がアースされているので、CFLから発生する放射ノイズは該導電面からアースに落とされカットされるため、放射ノイズを減少させ他の電子機器に悪影響を与えることが無い。

【0008】

【実施例】

以下、本考案に係る冷陰極管の面光源装置の一実施例を添付図面に基づいて詳細に説明する。

図1に示されているように、本実施例の冷陰極管の面光源装置11のランプハウス12は上部が開口された矩形箱体状を呈しており、このランプハウス12内には複数本のCFL13が収納されている。

【0009】

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上記CFL 13を収納するランプハウス12の開口部12aは、該CFL 13の直接光を減光する矩形平板状のライティングカーテン14で覆われている。このライティングカーテン14は、例えば上記CFL 13の直接光が当たる部分にアルミニウム蒸着したポリエステルフィルムからなっている。

#### 【0010】

また、このライティングカーテン14上には、金属酸化物からなる透明導電膜16が載置されている。この透明導電膜16は、可視光線に対し透明で電気伝導性を有する、例えばITO (Indium Tin Oxide) フィルム、 $\text{In}_2\text{O}_3$ 、および $\text{SnO}_2$ 等によって構成されている。すなわち、この透明導電膜16は、透明の合成樹脂製フィルム上に金属酸化物の導電層を形成したものである。この透明導電膜16の導電面16aは、例えば該面光源装置11に備えられたプリント基板(図示せず)のアースパターンに接続してアース17されている。

#### 【0011】

さらに、上記透明導電膜16上には、光を拡散する拡散板15が載置されている。この拡散板15は例えば乳白色の合成樹脂板等によって形成されている。

#### 【0012】

かくして、上記CFL 13を収容するランプハウス12上に、ライティングカーテン14、金属酸化物からなる透明導電膜16及び拡散板15を順次載置し、これらを一体化して面光源装置11を構成している。そして、本実施例の面光源装置11を液晶表示装置のバック照明として使用すべく、該面光源装置11上には液晶(図示せず)が載置されている。

#### 【0013】

次に、上記実施例における作用を述べる。

上述したように、上記CFL 13を収納するランプハウス12上に載置されたライティングカーテン14と拡散板15との間に、例えばITOフィルム等の金属酸化物からなる透明導電膜16が介設されている。これにより上記CFL 13から発生する局所的な熱は該透明導電膜16の導電面16aに伝達されることになる。この導電面16aが金属酸化物からなるので、該導電面16aにおいて温度が均一化されることになる。従って、液晶面には均一な温度が伝わり、その表

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示ムラが無くなり、上記CFL13から発生する局所的な熱の液晶表示への悪影響を防止することができる。

**【0014】**

また、このように透明導電膜16がライティングカーテン14と拡散板15との間に介設され、且つこの透明導電膜16の導電面16aは例えばプリント基板のアースパターンに接続されている。従って、上記CFL13から発生する放射ノイズは上記透明導電膜16の導電面16aからアース17に落とされカットされるため、該放射ノイズを減少させ他の電子機器に悪影響を与えることを有効に防止することができるものである。

さらに、上記透明導電膜16は、可視光線に対し透明であるので、実質的に液晶表示を阻害することは無い。

**【0015】****【考案の効果】**

以上述べたように本考案の冷陰極管の面光源装置によれば、CFLから発生する局所的な熱の液晶表示への悪影響を防止できると共に、CFLから発生する放射ノイズの液晶表示装置に付設された他の電子機器への悪影響を防止することができるという、優れた効果を発揮する。

**【提出日】** 平成4年2月5日

**【手続補正1】**

**【補正対象書類名】** 明細書

**【補正対象項目名】** 0014

**【補正方法】** 変更

**【補正内容】**

**【0014】**

また、このように透明導電膜16がライティングカーテン14と拡散板15との間に介設され、且つこの透明導電膜16の導電面16aは例えばプリント基板のアースパターンに接続されている。従って、上記CFL13から発生する放射ノイズは上記透明導電膜16の導電面16aからアース17に落とされカットさ



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れるため、該放射ノイズを減少させ他の電子機器に悪影響を与えることを有効に防止することができるものである。

さらに、上記透明導電膜16は、可視光線に対し透明であるので、実質的に液晶表示を阻害することは無い。

尚、上記透明導電膜16は、CFL13とライティングカーテン14との間に介設しても良いし、或いは面光源装置11の表面に設けても良い。